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gether with vertebræ of the same species, are to be found in the museum at the University at the last named place, which museum also contains the mandibles of *Elephas armeniacus* found at Almudovar del Rio near Cordoba.

GEOLOGICAL NEWS.—GENERAL.—Herr Schlüter in two papers entitled "Ueber die regulären Echinodermata der Kreide Nord Americas," and "Ueber Inoceramus und Cephalopoden der Texanischen Kreide, (Niederrhein. Gesselschaft at Bonn, March, 1887), describes *Salenia mexicana*, from Chihuahua, Mexico, and *Inoceramus subquadratus*, *Turrillites irrideus*, and *T. varians* from Austin, Texas. The validity of the three species last mentioned is exceedingly doubtful, as the descriptions give no data sufficient to differentiate them from species already described by Roemer and Shumard. He also asserts that the Austin Cretaceous is equivalent to that of Ems, Germany, a rather indefinite statement since within the corporate limits of Austin is found nearly the whole range of the comprehensive Texas Cretaceous under conditions which could hardly be duplicated.—*R. T. Hill.*

MINERALOGY AND PETROGRAPHY.[1]

PETROGRAPHICAL NEWS.—Messrs. Adams and Lawson [2] of the Canadian Geological Survey have been examining the rocks associated with the apatite in the Canadian apatite mines, to determine whether or not there is present a rock similar to the scapolite-diorite occurring in the Norwegian apatite region. They find that in some instances the Canadian apatite veins occur in a rock, composed essentially of orthoclase and biotite, with or without augite. i.e, either mica-syenite or augite-mica-syenite. None of the thin sections of the rocks associated with the apatite resemble in the least those of the Norwegian rock. At other regions in the Canadian Laurentian, however, associated with limestones and amphibolites, specimens were collected which are found to bear a strong likeness to the scapolite-rock from Norway. A specimen from near Arnprior on the River Ottawa, is described as a granular aggregate of augite, hornblende, scapolite, epidote, enstatite, pyrrhotite and rutile. The hornblende appears in some cases to be primary and in others to be secondary. The scapolite is in large colorless grains, many of which show polysynthetic twinning lamellæ, which may be due to the remains of the original plagioclase from which the scapolite was derived. Inclusions of dust and fluid cavities are present in the scapolite in large quantities and microlites are developed along its cleavage planes. The rutile occurs in grains closely associated with the scapolite. In several instances these grains appear to be made up of lamellæ, in which, however, there is no alternation of extinction as in the case of polysynthetic twins. The authors call the rock a scapolite-diorite. A rock from McDougall, Parry Sound District, contains a basic pagioclase in addition to the minerals mentioned above, and has been called plagioclase-scapolite-diorite. Schistose rocks with the composition of the last mentioned diorite, have had their schististy produced in them by pressure, as is evident from the shattered condition of the plagioclase constituent. The scapolite in these rocks bear no marks of a secondary origin from plagioclase. Augite is lacking, but biotite and quartz are observed in addition to the minerals found in the diorites.—The dolerites[1] of Londorf, Hessec, embrace coarse and fine grained varieties as well as glassy phases. The former consists of plagioclase, a titaniferous augite, olivine, a little enstatite, magnetites, apatite and titanic iron. The olivine is a pure hyalosiderite, elongated in the direction of the *c* axis, and intergrown with plates of titanic iron in such a way that these are perpendicular both to the cleavage planes and to the long axes of the olivine crystals. Amygadaloidal cavities contain the rock forming minerals together with little crystals of hornblende, and tridymite and masses of hyalite. To account for the existence here of well developed crystals of the minerals occurring in the body of the rock, Streng supposes the bubble of gas which gave rise to the cavity to have moved along through the partly solidified magma, shoving out of its way the liquid portions and leaving the crystals free. Other substances are supposed to be due to the alteration of the glass which was left attached to the crystals. The hornblende is regarded as having been deposited from the hot solutions, which would naturally circulate through the amygdaloidal cavities. The sublimation theory proposed to explain the existence of druse minerals in cavities of eruptive rocks he dismisses as unsubstantiated by facts. Upon the surface of the glassy dolerite is a crust of altered material with the characters of palagonite.—Lœwinson-Lessing[2] has embraced in a very readable article the views which are gradually becoming prevalent among petrographers in reference to the origin of diabases, gabbros and diorites. After briefly calling attention to the acknowledged differences between the structure of intrusive and effusive rocks, and emphasizing the peculiar features of the diabase structure, the author declares that this is the structure of an effusive rock rather than of an intrusive one. The association of diabases with fossil-bearing tuffs and their gradation into augite-porphyrites leads him to regard them as effusive under water, with the augite-porphyrites as their equivalent terrestrial effusives. The gabbros he acknowledges to be intrusive, and would regard as the intrusive equivalents of the diabases. In recapitulating his views the author divides the diabasic rocks into (1) intrusives (gabbros, granitoid-diabases), and (2)effusives, (*a*) terrestrial (augite-porphyrites and melaphyres), and (*b*) sub-marine (ophite-diabases). The diorites he would separate into those which are merely altered phases of diabase (including the epidiorites and the proterobases), and the primary diorites, which owe their hornblendic constituents to the presence of water vapor in the magma from which they solidified. Since hornblende is found only in those portions of rocks which cooled in the intratellurial period, *i. e.*, under such pressure as would prevent the escape of water, the diorites are to be looked upon as characteristic plutonic rocks.—The kersantite[1] dyke rocks from south-western East Thuringia contain numerous inclusions of granite which have been more or or less affected by the enclosing rock. The quartz of the granite has been enlarged by the addition of new material, and has yielded tridymite as a product of its alteration. It contains numerous glass inclusions as the result of the fusion of original mica inclusions. Mica, augite and a new crystallization of feldspar have originated from the feldspar of the granitic rock. The original mica has changed into spinel and augite. Garnet, sillimanite, rutile, and apatite, which were among the original constituents of the granite can no longer be detected in the inclusion. The groundmass in which the new minerals lie consists of a micro-felsitic aggregate of quartz and feldspar, in which are numerous concentric and radial spherulites, and a well-marked fluidal structure. Inclusions of a mica schist, and of a cordierite bearing andalusite contact rock are also found in the same kersantite.—Mr. Cross[2] communicates some brief descriptions of a few of the eruptive rocks occurring in Custer Co., Colorado. The first rock described is a garnetiferous rhyolite with a eutaxitic structure. It is remarkable for its simple composition which is as follows:

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[1] Edited by Dr. W. S. Bayley, Colby University, Waterville, Me.

[2] Can. Rec. of Science, 1888, p. 185.

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[1] Streng : Neues Jahrb. f. Min., etc. 1888. II. p. 181.

[2] Bull. Soc. Bélg. d. Géol. II. 1888, p. 82.

SiO_2	Al_2O_3	Fe_2O_3	FeO	MnO	CaO	MgO	K_2O	Na_2O	H_2O	P_2O_5
75.20	12.96	.37	.27	.03	.29	.12	8.38	2.02	.58	tr.=100.22.

A sanidine-oligoclase-trachyte possesses the peculiarity of a secondary porous structure due probably to the alteration of inclusions. Its biotite has yielded augite on its corroded edges. In a syenite occurring in narrow dykes are irregularly-shaped pieces of biotite, with their greatest development in the direction of their *c* axes. Peridotite and an olivine-augite-diorite are also described. The former contains brown hornblende and hypersthene in about equal proportions.—The same writer[3] announces the discovery of a second occurrence of phonolite in the United States. The specimen examined was not found in place. It was picked up on the Eastern slope of the Hayden divide, between Florissant and Manitou, Colorado. The rock consists of about 25 per cent. of nepheline, of granular sanidine, prismatic particles of a deep green hornblende, and little colorless grains of a mineral supposed to be augite.—After an examination of the specimen of altered diabase from Quinnesec, Mich., Cathrein [1] concludes that the rutile, which Williams [2] thought to be secondary after ilmenite contains no titanium, and can, therefore, not have given rise to the rutile by alteration.—A porphyritic hornblende—andesite from Dewéboyun in Turkey in Asia, is described by Lœwinson–Lessing[3] as composed by large crystals of hornblende and labradorite in a groundmass consisting of plagioclase microlites in a glassy base.—Karl Schneider [4] has observed the alteration of sphene into calcite and perofskite in a phonolite from Bohemia.

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[1] R. Pohlmann: Neues Jahrb. f. Min., etc. 1888. II. p. 87.
[2] Proc. Col. Scient. Soc. 1887. p. 228.
[3] Proc. Col. Scient. Soc. 1887. p. 167.

MINERALOGICAL NEWS.—*New Minerals*, *Sperrylite* [5] is the first compound of platinum that has been found as a mineral. It occurs in the Vermillion mine, in Algoma, Ontario, in a layer of loose material on the contact between a vein of gold-bearing quartz and the enclosing rock, and in pockets in the decomposed ore. In both cases it is associated with copper and iron pyrites. The sperrylite is found in small lustrous grains, which are fragments of crystals on which Mr. Penfield has discovered cubic, dodecahedral, octahedral, and pyritoid faces. The color of the fragments is tin-white and their powder black. Their hardnesss is between 6 and 7. Although their specific gravity is 10.602 the grains have a tendency to float upon the surface of water. Analysis yielded :

As	Sb	Pt	Rh	Pd	Fe	SnO_2
40.98	0.50	52.57	.72	tr.	.07	4.62

corresponding to Pt As_2, after allowing for the cassiterite present as an impurity. The artificial compound made by passing vapor of arsenic over red hot platinum possesses many of the properties of the natural substance, the most characteristic of which is instant fusion upon contact with red hot platinum, with the evolution of almost odorless fumes of arsenic, and the production of porous excrescences of the color of platinum. The composition of the mineral and its crystallization relegate it to the pyrite group.—Attention has already been called to the new mineral [6] Beryllonite. A full description of its occurrence and properties has recently been given by Messrs. E. S. Dana and Wells.[7] The mineral is found at the base of the McKean mountain near Stoneham, Maine, in the destritus of what is supposed to be a granitic vein in mica schist. In addition to the facts announced in the former notice it may be added that the mineral is orthorhombic with $a : b : c = .5724 : 1 : .5490$. It has four cleavages parallel respectively to $0 P$, $\infty P\bar{\infty}$, $\infty \breve{P}3$ and $\infty P\breve{\infty}$ in the order of their perfection. Twins parallel to ∞P are not rare. It is colorless or yellow and transparent. The plane of its optical axes is $\infty P\bar{\infty}$. Its double refraction in negative and $2 Ha = 72° 47'$ for yellow light. The mineral is remarkable for the presence in it of cavities elongated parallel to the *c* axis. These sometimes contain two movable bubbles, and are so numerous as to produce an apparent columnar structure in the mineral.—*Dahlite* from Bamle, Norway, is described by Brögger and Bäckström[1] as a new mineral occurring as a thin yellow crust on massive apatite. This crust is composed of little fibres arranged perpendicular to its surface, which is smooth and lustrous. The mineral is translucent, is optically negative, has a hardness of about 5 and a specific gravity of 3.053. It is a hydrous double phosphate and carbonate of calcium ($4 Ca_3 (PO_4)_2 + 2 Ca CO_3 + H_2O$) It gave on analysis :

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[1] Neues Jahrb. f. Min., etc. 1888. II. p. 151.
[2] Amer. Naturalist. Feb. 1888. p. 168.
[3] Bull. Soc. Belg. d. Géol. 1887. I. p. 110.
[4] Neues Jahrb. f. Min., 1889, I. p. 99.
[5] Amer. Jour. Sci., Jan. 1889, p. 71.
[6] Amer. Naturalist, Nov. 1888, p, 1023.
[7] Amer. Jour. Sci., Jan., 1889, p, 23.

P_2O_5	CO_2	CaO	FeO	Na_2O	K_2O	H_2O
38.44	6.29	53.00	.79	.89	.11	1.37

Awaruite[2] is the first nickel-iron compound described that is not of meteoric origin. It occurs in small plates and granules in the sand of George River, in the western part of South Island, New Zealand. Its composition is :

Ni	Co	Fe	S	Si
67.63	.70	31.02	,22	,43

The mother rock of the mineral is a serpentine that has originated from an olivine rock by alteration.— Darapsky[3] adds *Naposite* to the list of iron sulphates from Atacama, Chili. It is found in radially fibrous, glistening, brittle, dark-red crystals containing 24.72 per cent. of SO_3, 30 per cent. of Fe_2O_3, and 16.43 per cent. of H^2O, thus corresponding to the formula $Fe (FeO_3 SG 43, + 10 H_2O$ It is decomposed by water and by acids.—*Mazapilite*. Dr. König[3] announces the discovery of a new arsenide of calcium and iron from Zacatecas, Mexico. It occurs in dark red and black, probably orthorhombic crystals, with a hardness of 7 and a specific gravity of 3.567.

MISCELLANEOUS.—Gonnard[4] describes natural corrosion figures in *Barite* from the Puy-de-Dôme, that consist of little depressions with an orthorhombic or a monoclinic symmetry. Those of the latter kind are triangular in shape and are supposed to owe their abnormal symmetry to twinning.—Mr. Cross[1] has noticed striations in the cubic faces of *galena* from the Minnie Moore mine, Bellevue, Idaho, which he believes to be due to twinning lamellæ produced by the slipping of alternate bands of the mineral along gliding planes, as a consequence of pressure, The twinning planes lie in the zone between $\infty O \infty$ and ∞O—New methods for the detection of tin, caesium, and rubidium under the microscope are suggested by Streng[2] The detection of tin depends upon the fact that KCe and Sn Ce yield a double salt, which crystallizes in little tabular orthorhombic crystals, which upon the addition of nitric acid pass over into octahedroas modified by icositetrahedrons. Caesium and rubidium chlorides with stannous chloride in hyrochloride acid solutions give crystals of the same shape as those of potassium and stannous chlorides, but in the case of caessium these are brightly polarizing, while in the case of rubidium they are monoclinic. The author also calls attention to the fact that all hydrofluoric acid sold as pure, even when carefully made from cryolite, contains silica and cannot be used for the detection of this substance in small quantities.—Calcium carbonate readily decomposes solutions of aluminium salts in the cold, with precipitation of gelatinous aluminium hydroxide, which, in the presence of coloring matters absorbs these and becomes stained, Under the same conditions dolomite produces no change in the solutions unless it remains in contact with them for a long time. A knowledge of these facts induces Lemberg[3] to propose a method of distinguishing between calcite and dolomite in thin sections of rocks. The solution which he proposes for use is made by dissolving four parts of dry aluminium chloride in sixty parts of water and adding to it six parts of *haematoxylin campechianum*,

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[1] Aefv. Vet.—Akad. Förhandl, 1888, d. 493. Ref. Am. Jour. Sci. Jan. '89, p. 77.

[2] Vom Rath: Ref. Neues Jahrb. f. Min., etc., 1889, I. p. 23.

[3] Boletin d. l. Soc. Nac. Min., Santiago de Chile, Ref. Neues Jahrb, f. Min, 1889, I p. 33.

[4] Bull. Soc. Fr. d. Min., 1888, XI., p. 269.

BOTANY.[4]

Two Big-rooted Plants of the Plains.—Now and then some of the plants of the plains present odd characteristics not observed in some of the eastern regions. Two species native of the open plains at an altitude of from 2,000 feet above the sea to the base of the Rocky Mountains are remarkable for their enormous roots. One

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[1] Proc. Col. Scient. Soc. 1887, p. 171.
[2] Neues Jahrb. f. Min., etc., 1888, II., p. 142.
[3] Zeits. d. deuts. geol. Gesell. XL., 1888, p. 357.
[4] Edited by Chas. E. Bessey, Lincoln, Nebraska.